

**WHAT IS CLAIMED IS:**

1. A position detecting method for detecting a position  
of a plurality of divided area formed on a substrate,  
5 comprising:

moving said substrate to an observation field  
relatively;

' detecting a positional relation between a reference  
coordinate system which defines a movement of said substrate  
10 and an arrangement coordinate system corresponding to said  
plurality of divided area while the substrate is moving  
relatively to an observation field.

2. The position detecting method according to claim 1,  
15 wherein

said divided area on said substrate is divided by street  
lines, and said positional relation is detected based on a  
detection result of the street line while the relative movement  
is performed.

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3. The position detecting method according to claim 2,  
wherein

prior to the detection of the street line, an outer edge  
of the substrate is measured, and said positional relation  
25 between said reference coordinate system and said arrangement  
coordinate system is detected with a predetermined accuracy  
which is lower than that detected while the relative movement  
is performed.

4. The position detecting method according to claim 3,  
wherein

5 said substrate is rotated so that a direction along an  
axis of said reference coordinate system parallel with the  
direction along axis of said arrangement coordinate system  
based on to said positional relation detected with said  
predetermined accuracy.

10 5. The position detecting method according to claim 2,  
wherein

said observation field is moving to said substrate  
relatively along said street line.

15 6. The position detecting method according to claim 5,  
wherein

in the detection of said street line, a positional change  
of a border between said divided area and said street line  
is measured by observing of a moving picture in the range of  
20 said observation field, while said substrate is moving to the  
observation field relatively, and said positional relation  
is detected based on a measurement result of the change of  
the border.

25 7. The position detecting method according to claim 6,  
wherein

when it is presumed that the border is out of range of  
the observation field, the relative movement of said substrate

to said observation field is corrected so that said border in a range of the observation field is continuously caught.

8. The position detecting method according to claim 6,  
5 wherein

in the detection of said street line, light reaches respective point in the range of said observation field during predetermined time, and an image formed by total amount of the light is picked up, and then said position change of the  
10 border in the range of the observation field is measured based on a picked up result.

9. The position detecting method according to one of claims 1 to 8, wherein

15 the relative movement of the said substrate to said observation field is performed to catch a predetermined number of position detection mark, which is chosen from a plurality of the position detection mark formed on said street line, in said observation field with predetermined order; the  
20 position of said chosen position detection mark is detected; based on the detection result, said positional relation is detected with higher accuracy than that detected while the relative movement is performed.

25 10. A position detecting method for detecting position of a plurality of divided area which are divided by street lines on a substrate by detecting a plurality of position detection mark formed on said street line, wherein

said street line is detected when said plurality of position detection mark is sequentially detected, and a moving route of said substrate is decided by using a detection result.

5           11. The position detecting method according to claim 10, wherein

an observation field for the detection of said street line is moving to said substrate relatively along said street line.

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12. The position detecting method according to claim 11, wherein

in the detection of said street line, a positional change of a border between said divided area and said street line  
15 in the observation field is measured by observing of a moving picture in the range of the observation field, while the relative movement is performed.

13. The position detecting method according to claim  
20 12, wherein

in the detection of said street line, light reaches respective point in the range of said observation field during predetermined time, and an image formed by total amount of the light is picked up, and then said position change of the  
25 border in the observation field is measured based on a result of the picked up image.

14. A position detecting apparatus which detects a

position of a plurality of divided area on a substrate comprising:

- a substrate stage which holds said substrate;
- a driving unit which drives said substrate stage; and
- 5 an observation system which observes said substrate while said substrate is moved by said driving unit.

15. The position detecting apparatus according to claim 14, wherein

- 10 said divided area is divided by street lines, and further comprises a control system which controls said driving unit which is used for detection of said street line in said observation field while moving said substrate stage.

15 16. The position detecting apparatus according to claim 15, wherein

- said control system controls said driving unit to make said observation field of said observation system trace on a route to chosen predetermined position detection mark, which
- 20 is chosen from those formed on said street line, and then detects a position of the predetermined position detection mark, and further detects the position of respective divided area according to a detection result of the predetermined detection mark.

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17. The position detecting apparatus according to claim 16, wherein

- said route is along a street line.

18. An exposure method wherein a predetermined pattern is transferred to a divided area on a substrate by emitting an energy beam wherein

5 a position of said divided area formed on the substrate is detected by using the position detecting method according to any one of claims 1 to 8 and 10 to 13, prior to said transfer.

19. An exposure apparatus which transfers a  
10 predetermined pattern to a divided area on a substrate by emitting energy beam comprising:

illumination system which emits said energy beam; and  
a position detecting apparatus according to any one of  
claims 14 to 17 to detect a position of said divided area.

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20. A making method of an exposure apparatus which transfers a predetermined pattern to a divided area on a substrate by emitting energy beam comprising:

providing an illumination system which emits said energy  
20 beam;

providing a substrate stage which holds said substrate;  
providing a driving unit which drives said substrate  
stage;

providing a observation system which observes said  
25 substrate during moving the substrate stage by the driving  
unit.

21. The making method of an exposure apparatus

according to claim 20, wherein

said divided area on said substrate is divided by street lines, and further comprises

providing a control system that controls said driving  
5 unit, the unit which moves said substrate stage so as to detect the street line by said observation system while moving said substrate, when marks on said substrate is detected by using said observation system.

10 22. A device manufactured by an exposure apparatus according to claim 19.

23. A device manufacturing method comprising lithographing, wherein

15 a predetermined pattern is transferred to a divided area on said substrate which is divided by street line by using an exposure method according to claim 18.